

Grant County Building Department

(509) 754-2011 ext. 3001 or 3020

Post Frame Structure (Pole Building)

To use this handout as your plans, fill in the blanks and follow directions on this page and following pages. **RETURN THIS ENTIRE HANDOUT.**

This building design is applicable within the following criteria: IRC Seismic Design Category "C"; Wind speed, $V_{ult} = 110$, Exposures A, B & C; Roof trusses shall be designed to a minimum 20 lb. live load; The assumed soil bearing pressure is 2,000 p.s.f.

12" Run
Roof Slope "Rise

ROOFING MATERIAL _____
Roofing must be installed as per the manufacturer's specification.

PURLINS: 2"x _____ " @ _____ " o.c.
Sized as per Rafter Span Table on Page 4; 24" o.c. maximum

MANUFACTURED TRUSSES: Provide truss specs onsite for framing inspection.

SIDING: _____

2"x _____ " GIRTS @ _____ " o.c.

TREATED POSTS

HEIGHT: _____
Top of concrete piers to truss bottom chord.

SIZE: _____
As per Post Size Guidelines on Page 4.

SPACING: _____
12'-0" o.c. maximum

BUILDING SIZE: W x L
_____ x _____

LEAN-TO SIZES: W x L
Attach Lean-to Handout
_____ x _____
_____ x _____

CONCRETE PIERS

SIZE: _____ "x _____ " deep
As per Post Hole Guidelines on Page 4

Grade

Use of this post frame handout is limited to Group U occupancies - accessory to residence and private small agricultural buildings.

Use of these plans is limited to conventional post frame construction with truss spans less than or equal to 40'-0" and wall heights up to 20'-0". Buildings with larger truss spans and/or greater wall heights shall be designed and stamped by an engineer licensed in the State of Washington.

Alternative post frame designs, such as truss ends bearing on header between posts, shall have plans designed and stamped by an engineer licensed in the State of Washington.

See Page 3 for construction details and code requirements of this building design.

Follow the instructions below to draw your floor plan.

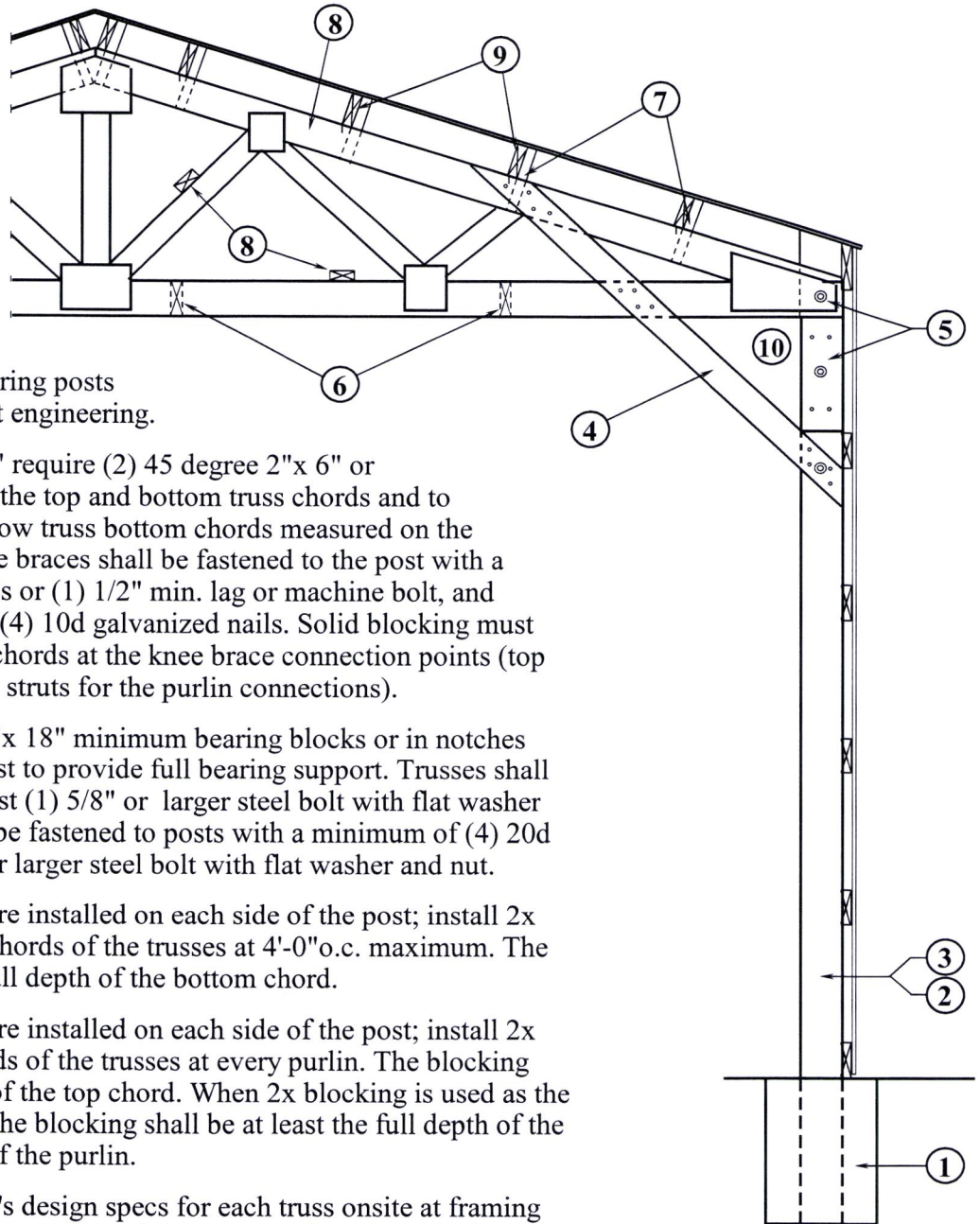
- 1. Draw the floor plan of your post frame structure, including lean-to's.
- 2. Show all post locations and the direction of the ridge of the roof structure.
- 3. Show location and size of all windows, overhead doors and man doors.
- 4. Will floors be concrete or dirt/gravel? Label and show locations, if partial, of each.
- 5. Show all interior rooms and plumbing and mechanical fixtures. Show accurate floor plan
- 6. Show accurate dimensions. See sample drawing on Page 5.



Post Frame Specifications and Construction Details

Cross-reference the numbers on the drawing to the specifications on the left of the page.

- 1) All posts must be poured in concrete. See the "Post Hole Guidelines" for the required post hole size. Dirt backfill is not an option.
- 2) See "Post Size Guidelines" to determine the required post size. Posts must have a min. pressure preservative retention rating of .60 PCF.
- 3) Bay spacing between truss-bearing posts shall not exceed 12'-0" without engineering.
- 4) Post heights greater than 10'-0" require (2) 45 degree 2"x 6" or larger knee braces, fastened to the top and bottom truss chords and to the sidewall post (24" min. below truss bottom chords measured on the exterior side of the post). Knee braces shall be fastened to the post with a min. of (4) 20d galvanized nails or (1) 1/2" min. lag or machine bolt, and to the truss chords with a min. (4) 10d galvanized nails. Solid blocking must be installed between the truss chords at the knee brace connection points (top chord blocking may be used as struts for the purlin connections).
- 5) Roof trusses shall sit on 2"x 6"x 18" minimum bearing blocks or in notches 1-1/2" deep on each side of post to provide full bearing support. Trusses shall be fastened to posts with at least (1) 5/8" or larger steel bolt with flat washer and nut. Bearing blocks shall be fastened to posts with a minimum of (4) 20d galvanized nails and (1) 5/8" or larger steel bolt with flat washer and nut.
- 6) In applications where trusses are installed on each side of the post; install 2x blocking between the bottom chords of the trusses at 4'-0" o.c. maximum. The blocking shall be at least the full depth of the bottom chord.
- 7) In applications where trusses are installed on each side of the post; install 2x blocking between the top chords of the trusses at every purlin. The blocking shall be at least the full depth of the top chord. When 2x blocking is used as the strut connection to the purlin, the blocking shall be at least the full depth of the top chord, plus the full depth of the purlin.
- 8) Provide the truss manufacturer's design specs for each truss onsite at framing inspection. Lateral bracing is required per the truss manufacturer's specifications. Trusses may be built onsite, but must be constructed from engineers stamped design.
- 9) Refer to the Rafter Span Table 802.5.1(1) for purlin size. Roof purlins must be restrained from overturning and wind uplift by installing in one of the following methods:
 - a) Face nailing to strut blocking installed between truss top chords,
 - b) End and toe nailing to the truss top chord,
 - c) joist hangers fastened to truss top chord, or,
 - d) 2x ledger nailed to truss top chord as support for purlins.
- 10) All hardware (less than 3/16" in thickness), hangers, connectors and fasteners (less than 1/2" in diameter), in contact with preservative treated wood, must be hot-dipped galvanized, stainless steel, silicon bronze, or copper.



Post Hole and Post Size Guidelines

Entire depth of hole must be filled with concrete.

Building Height* (Top of pier to bottom of truss bottom chord)	Style of Construction	Column Size		Post Hole Depth with 18" Hole Diameter	Post Hole Depth with 24" Hole Diameter
		Up to 30'0 Span	Up to 40'0 Span		
Up to 8'0	Open	6"x 6"	6"x 6"	24"	24"
	Closed	6"x 6"	6"x 6"	36"	30"
Up to 10'0	Open	6"x 6"	6"x 6"	30"	27"
	Closed	6"x 6"	6"x 6"	39"	33"
Up to 12'0	Open	6"x 6"	6"x 6"	36"	30"
	Closed	6"x 6"	6"x 6"	42"	36"
Up to 14'0	Open	6"x 6"	6"x 6"	36"	30"
	Closed	6"x 8"	6"x 8"	N/A	39"
Up to 16'0	Open	6"x 6"	6"x 6"	39"	33"
	Closed	6"x 8"	6"x 10"	N/A	42"
Up to 18'0	Open	6"x 6"	6"x 6"	42"	36"
	Closed	6"x 10"	6"x 10"	N/A	48"
Up to 20'0	Open	6"x 6"	6"x 6"	48"	42"
	Closed	6"x 10"	8"x 8"	N/A	48"

1. *Interpolation is not allowed. Use the next higher dimension to determine building height.
2. N/A = This post hole diameter is not allowed with required post size and post height.
3. Non-truss bearing intermediate gable end posts shall be 6"x 6" min. for all building heights and shall extend to the top of the gable truss top chord.
4. Posts for door and window openings shall be 4"x 6" min. imbedded in 12"x 18" min. concrete piers, except when using a truss-bearing post or adjusting the spacing of intermediate gable end posts.

Rafter Span Table for Purlin Size

IRC TABLE 802.5.1(1)
 RAFTER SPANS FOR COMMON LUMBER SPECIES
 (Roof Live Load = 20psf, ceiling not attached to rafters, L/Δ = 180)

Rafter Spacing (inches)	Species and Grade		Dead Load = 10 psf					Use this table to size the roof purlins. This table is typical for most post frame buildings. For additional options contact our office.
			2x4	2x6	2x8	2x10	2x12	
			Maximum Rafter Spans					
			(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	
24	Douglas-Fir Larch	SS	9-2	14-5	18-11	23-5	*	
	Douglas-Fir Larch	#1	8-7	12-6	15-10	19-5	22-6	
	Douglas-Fir Larch	#2	8-0	11-9	14-10	18-2	21-0	
	Douglas-Fir Larch	#3	6-1	8-10	11-3	13-8	15-00	
	Hem -Fir	SS	8-7	13-6	17-10	22-9	*	
	Hem -Fir	#1	8-4	12-3	15-6	18-11	21-11	
	Hem -Fir	#2	7-11	11-7	14-8	17-10	20-9	
	Hem -Fir	#3	6-1	8-10	11-3	13-8	15-11	
	Spruce-Pine-Fir	SS	8-5	13-3	17-5	21-8	25-2	
	Spruce-Pine-Fir	#1	8-0	11-9	14-10	18-2	21-0	
	Spruce-Pine-Fir	#2	8-0	11-9	14-10	18-2	21-0	
	Spruce-Pine-Fir	#3	6-1	8-10	11-3	13-8	15-11	

*Span exceeds 26 feet in length.

The following is a sample drawing only.

On Page 2 you must draw a floor plan specific to your building using practices shown below.
Show all items listed on Page 2 including accurate dimensions.

